Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel Level 3 GCE

Thursday 8 June 2023

Morning (Time: 2 hours 15 minutes plus 10 minutes setting up time)

Paper reference **9MT0/41**

Music Technology

Advanced

COMPONENT 4: Producing and Analysing

You must have: Figure 1 for Question 6 (enclosed), Pearson audio/MIDI files, headphones or monitor speakers, digital audio workstation (DAW) and MIDI keyboard.

Total Marks

Setting up time

- Open a new project in your DAW using 16 bit/44.1 kHz sample rate.
- Save the project as **'comp4_your candidate number' (e.g. comp4_1234)** in the folder designated by your centre.
- Set the metronome to **125 bpm**.
- Import 'drums.wav' to a new track in your DAW, aligned with the beginning of bar 1.
- Ensure that the drums are audible and play in time with the metronome. The drums begin bar 6, beat 2.
- You must not open the paper until instructed to do so by the invigilator.

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- Save your audio files for Questions 2, 3, 4 and 5 within the 2 hour 15 minutes examination time.
- You must ensure that the left and right earpieces of your headphones are worn correctly.
- Access to a calculator or calculator software is not permitted.
- Access to the internet or local network is not permitted.

Information

- The total mark for this paper is 105.
- The marks for **each** question are shown in brackets
  – use this as a guide as to how much time to spend on each question.

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

P75061A

©2023 Pearson Education Ltd.

N:1/1/1/1/1/1/1

P 7 5 0 6 1 A 0 1 2 0

Pearson

SECTION A

Answer ALL questions. Write your answers in the spaces provided.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

Question 1 is about the drum part.

1 Listen to the drum part you have imported.

(a) Identify the most appropriate quantise value for the drum part.

(1)

☒ **A** 1/64

☒ **B** 1/32

☒ **C** 1/16

☒ **D** 1/12

(b) The drums have been EQed with a high shelf boost. Identify which drum timbre would be most affected by this EQ.

(1)

☒ **A** Clap

☒ **B** Hi-hat

☒ **C** Kick

☒ **D** Snare

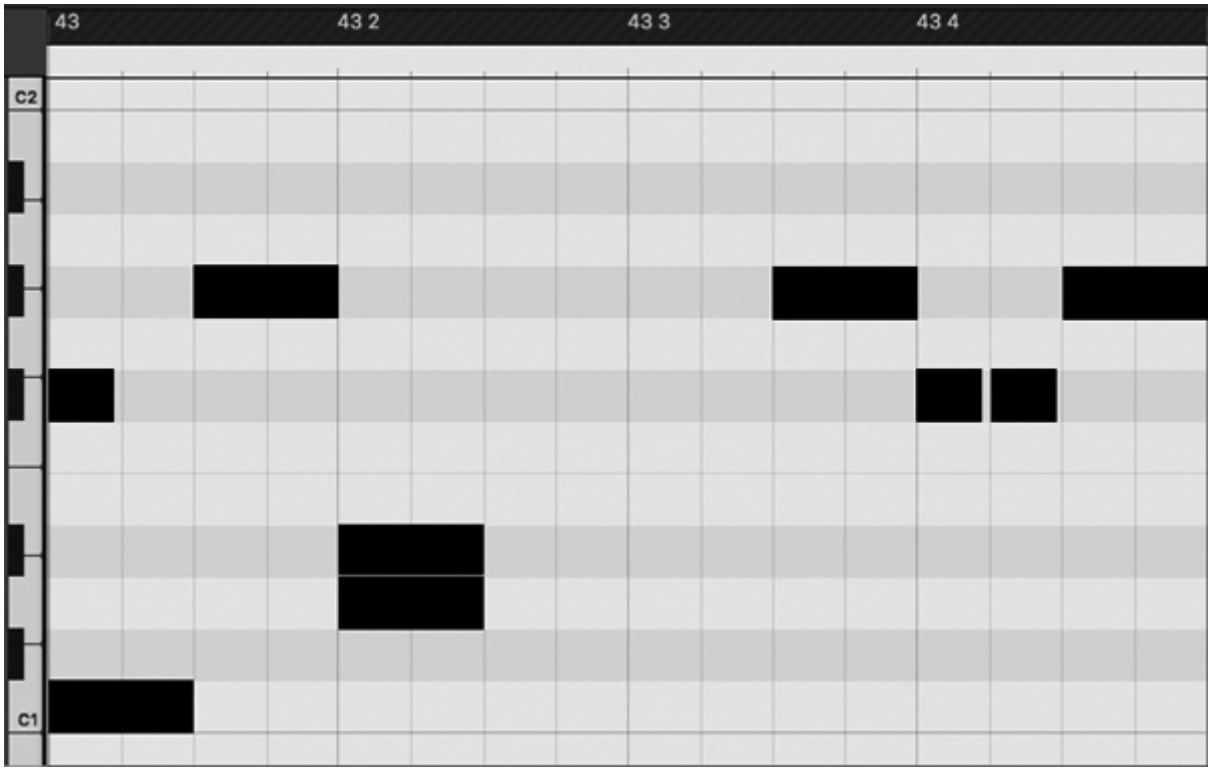
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(c) Draw the drum part for bar 43 on the piano roll editor below. Some drum hits for each timbre have been completed for you.

(5)



(Total for Question 1 = 7 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 2 is about the synth fills part.

2 Import the MIDI file 'synth fills.mid' to a new track in your DAW. Align the part so that the synth fills begin playing at the start of bar 30.

(a) Identify the highest pitch bend value in bar 30.

(1)

(b) MIDI controllers usually have a range of 0–127. Pitch bend values have a range between –8192 and 8191. State how pitch bend's greater range of values is achieved within the MIDI specification.

(1)

(c) There are only two different note velocity values used in the MIDI file. Complete the table below to give the velocity in decimal and in binary of the two different velocity values.

Velocity in decimal	Velocity in binary
(1)	**(1)**
(1)	**(1)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

(d) Import 'synth fills example.wav' to a new track in your DAW. The file illustrates how bars 33–39 of the synth fills part should sound. You should not use this audio in your final mix.

Create a synth sound that matches the timbre 'synth fills example.wav'.

(i) Ensure that the octave matches the example.

(1)

(ii) Use a square wave.

(1)

(iii) Match the pitch bend range with 'synth fill example.wav'.

(1)

(iv) Copy the amplitude envelope.

(1)

(v) Copy the velocity sensitive filtering.

(2)

(vi) Copy the modulation effect.

(1)

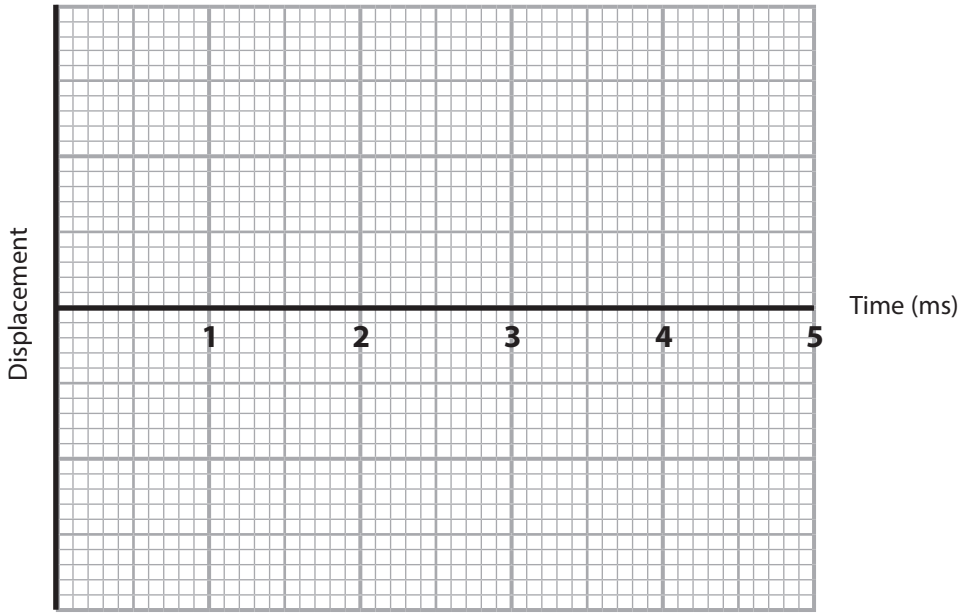
Bounce/export the completed synth fills part as a single 16 bit/44.1 kHz stereo .wav file to the designated folder on your computer.

Name it 'q2_ your candidate number' (e.g. q2_1234).

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

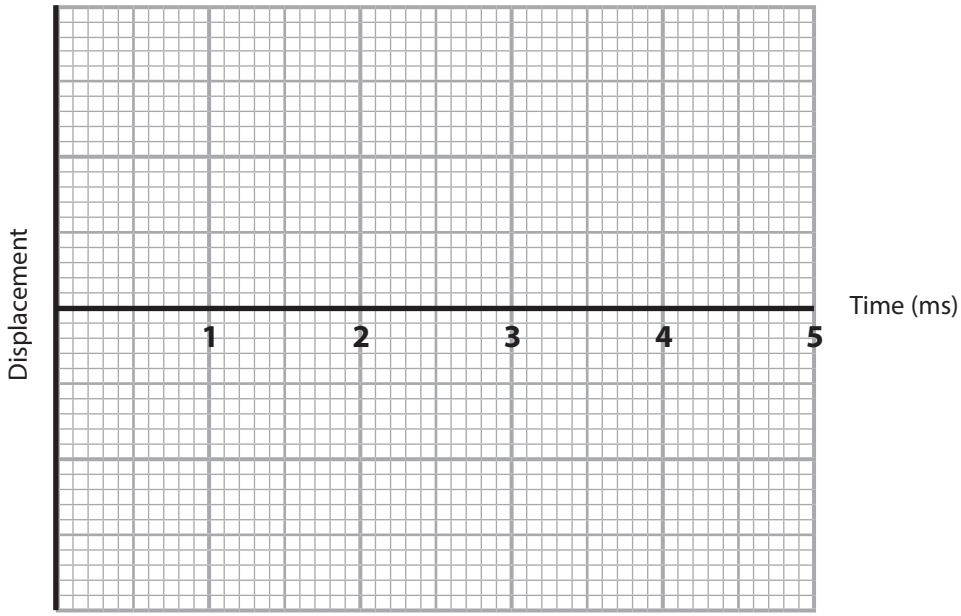
(e) (i) On the graph below draw a square wave with a period of 1 ms.

(2)



(ii) On the graph below, draw a saw wave one octave lower.

(2)



(Total for Question 2 = 17 marks)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

Question 3 is about the bass part and chorus synth part.

3 Import 'bass.wav' to a new track in your DAW. The beginning of this audio track should be aligned with the start of bar 1. The bass begins at the start of bar 2.

(a) An effect has been introduced on the bass in bars 6–9.

(i) Identify the effect.

(1)

.....

(ii) Identify the two parameters that have been automated on this effect.

(2)

1 .....

2 .....

(b) Pitch bend has been applied to the first note in bar 2. Identify the pitch bend range.

(1)

☒ **A** 1 semitone

☒ **B** 4 semitones

☒ **C** 7 semitones

☒ **D** 12 semitones

(c) In bar 26, the amplitude envelope is different. Describe how the amplitude envelope is different to other bars.

(2)

.....

.....

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

(d) Import 'chorus synth incomplete.wav' into your DAW. This is the incomplete chorus synth part. The beginning of this audio track should be aligned with the start of bar 1. The chorus synth begins at the start of bar 38.

Complete the chorus synth part.

- Use audio from 'chorus synth incomplete.wav'.
- The chorus synth must play in unison with the bass in bars 38–45.
- Complete the missing notes in bar 38.
- Complete bar 42.
- The chorus synth must not have any clicks or glitches.

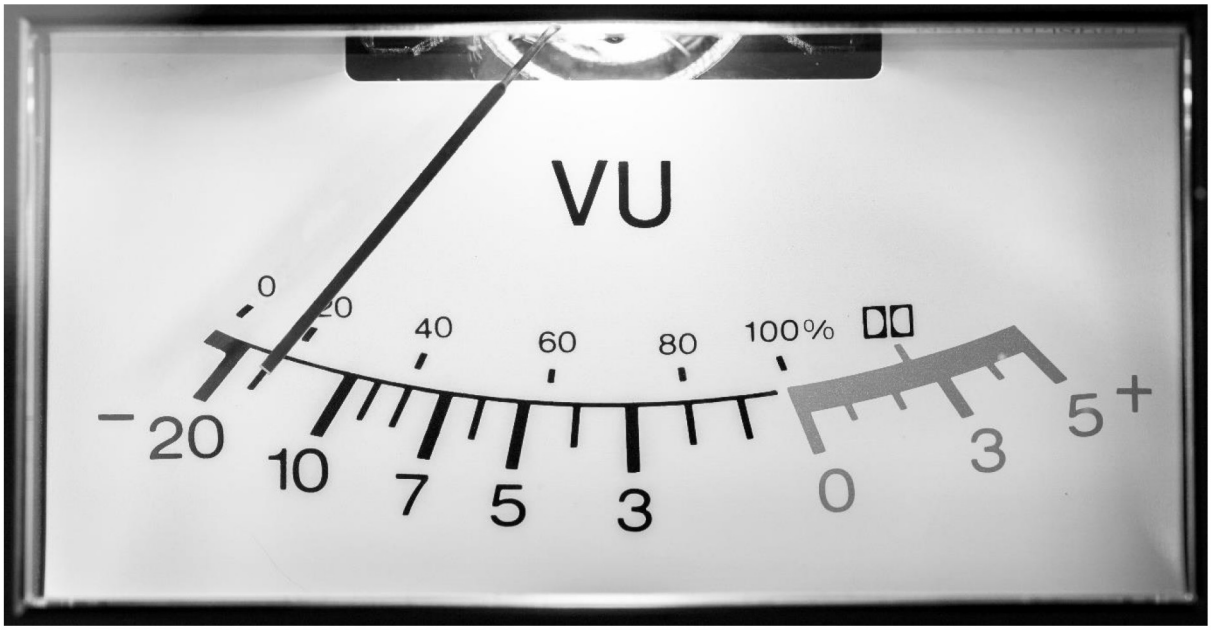
(9)

Bounce/export the completed chorus synth part as a single 16 bit/44.1 kHz stereo .wav file to the designated folder on your computer.

Name it 'q3_ your candidate number' (e.g. q3_1234).

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

(e) The picture below shows a VU meter.



(Source: © Shutterstock)

(i) Using the dB scale, identify the level shown.

(1)

.....

(ii) State why the numbers on the dB scale are not evenly spaced.

(1)

.....

(iii) Describe why RMS metering is not suitable to prevent clipping.

(2)

.....

.....

(Total for Question 3 = 19 marks)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

Question 4 is about the lead vocal part and backing vocal part.

4 Import 'lead vocal.wav' to a new track in your DAW. This track is the lead vocal part with a backing vocal in bar 43. Ensure that the beginning of this audio track is aligned with the start of bar 1. The vocal begins bar 2, beat 2.

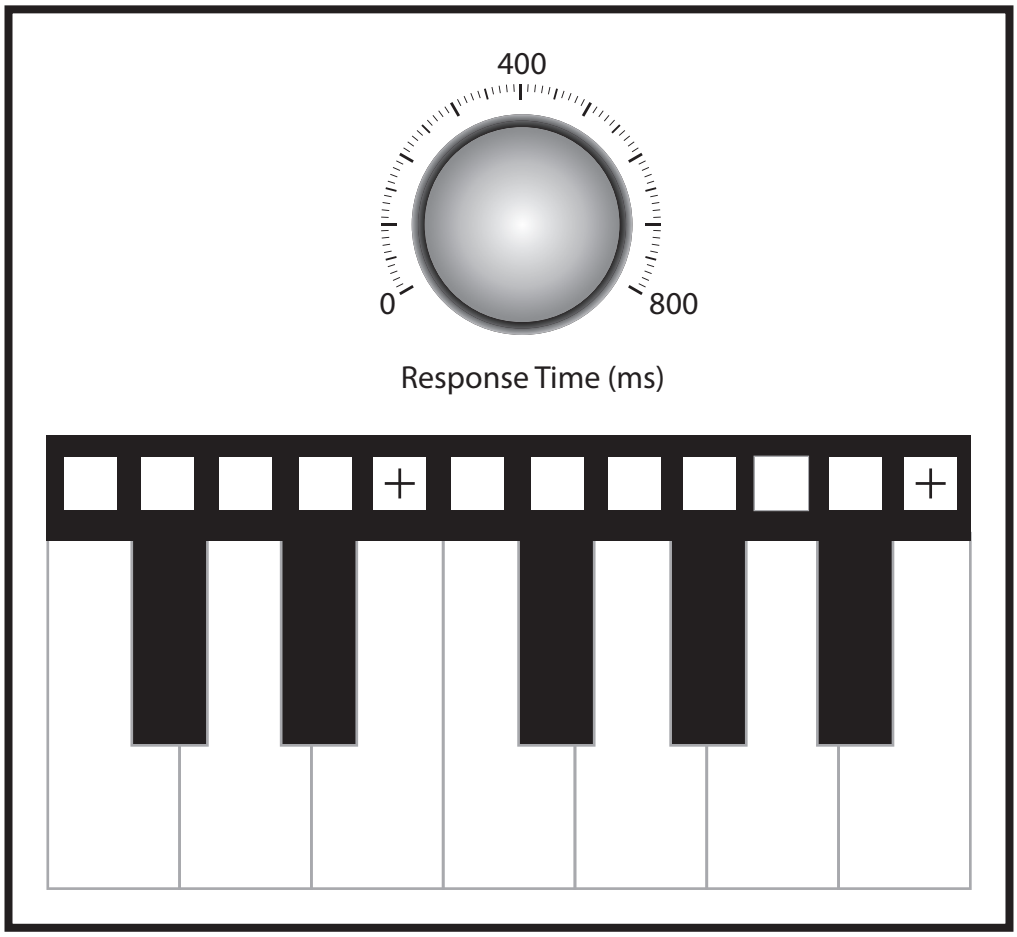
(a) Pitch correction has been used on the lead vocal throughout.

(i) On the picture below, draw the knob position for the response time.

(1)

(ii) A custom scale of six notes has been used to restrict the pitches the pitch correction will tune to. Two of the notes have been given: E and B. Draw the other four notes on the picture below.

(4)



DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

(b) Create a harmonised backing vocal track in bar 39.

- "dance floor" should be harmonised with a backing vocal singing the same words.
- The backing vocal should be in rhythmic unison with the lead vocal.
- The pitches should match the backing vocal in bar 43.

(5)

Bounce/export the completed lead vocal and backing vocal part as a single 16 bit/44.1 kHz stereo .wav file to the designated folder on your computer.

Name it 'q4_ your candidate number' (e.g. q4_1234).

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

(c) The vocals were recorded with a condenser microphone. The switch settings shown in the picture below are all unsuitable for recording this type of vocal. Discuss why the switch settings would be unsuitable for a lead vocal in a pop song.

(8)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 4 = 18 marks)

5 You should now have the following tracks in your DAW: drums, synth fills, bass, chorus synth, lead vocal and backing vocal.

(a) In the lead vocal, remove the breath and lip noise between the words "stop" and "Let's" in bars 31–32.

(2)

(b) Apply automated panning to the riser effect in the drum part in bar 25.

- The riser effect should move smoothly across the stereo field from left to right.
- Only bar 25 of the drum track should be affected by automated panning.

(3)

(c) Listen to the lead vocal effect beginning from bar 9, beat 4 on the first two phrases, "I know you took my heart onto the dance floor, spun around dancing like I've never seen before." Recreate the same effect from bar 13, beat 4 until the end of the song.

(3)

(d) Listen to the delay in bar 19 on the lead vocal. Recreate the same delay on "wish for" in bar 23.

(3)

(e) Gate the lead vocal.

- Only "You better show me what you can do" in bars 36–37 should be affected.
- The drum track should trigger the side chain of the gate so that the lead vocal stutters in time with the clap and hi-hat.

(3)

(f) Listen to the automated vocal reverb in bars 6–9. Recreate the same reverb during bars 2–5.

(4)

(g) Balance the levels of the mix.

(3)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

(h) Produce a final stereo mix.

- Ensure that the mix output is at as high a level as possible.
- It should be free from distortion.
- Do not limit or compress the mix output.
- Ensure that the beginning and the end of the music are not cut off.
- Ensure that silences at the beginning and at the end do not exceed one second.

(3)

Bounce/export the completed mix as a single 16 bit/44.1 kHz stereo .wav file to the designated folder on your computer.

Name it 'q5_ your candidate number' (e.g. q5_1234).

(Total for Question 5 = 24 marks)

TOTAL FOR SECTION A = 85 MARKS

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

SECTION B

Answer Question 6. Write your answer in the space provided.

6 Figure 1 shows compressor, EQ and delay plug-in inserts for a rock lead vocal. The final mix will also include bass guitar, distorted electric guitar and drums. The tempo of the song is 120 bpm.

Evaluate the suitability of the plug-in settings for a rock recording.

(20)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 6 = 20 marks)

TOTAL FOR SECTION B = 20 MARKS
TOTAL FOR PAPER = 105 MARKS

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

BLANK PAGE

BLANK PAGE

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

Pearson Edexcel Level 3 GCE

Thursday 8 June 2023

Morning (Time: 2 hours 15 minutes plus 10 minutes setting up time)

Paper reference **9MT0/41**

Music Technology

Advanced

COMPONENT 4: Producing and Analysing

Figure 1 for Question 6

Do not return Figure 1 with the question paper.

Turn over ▶

P75061A

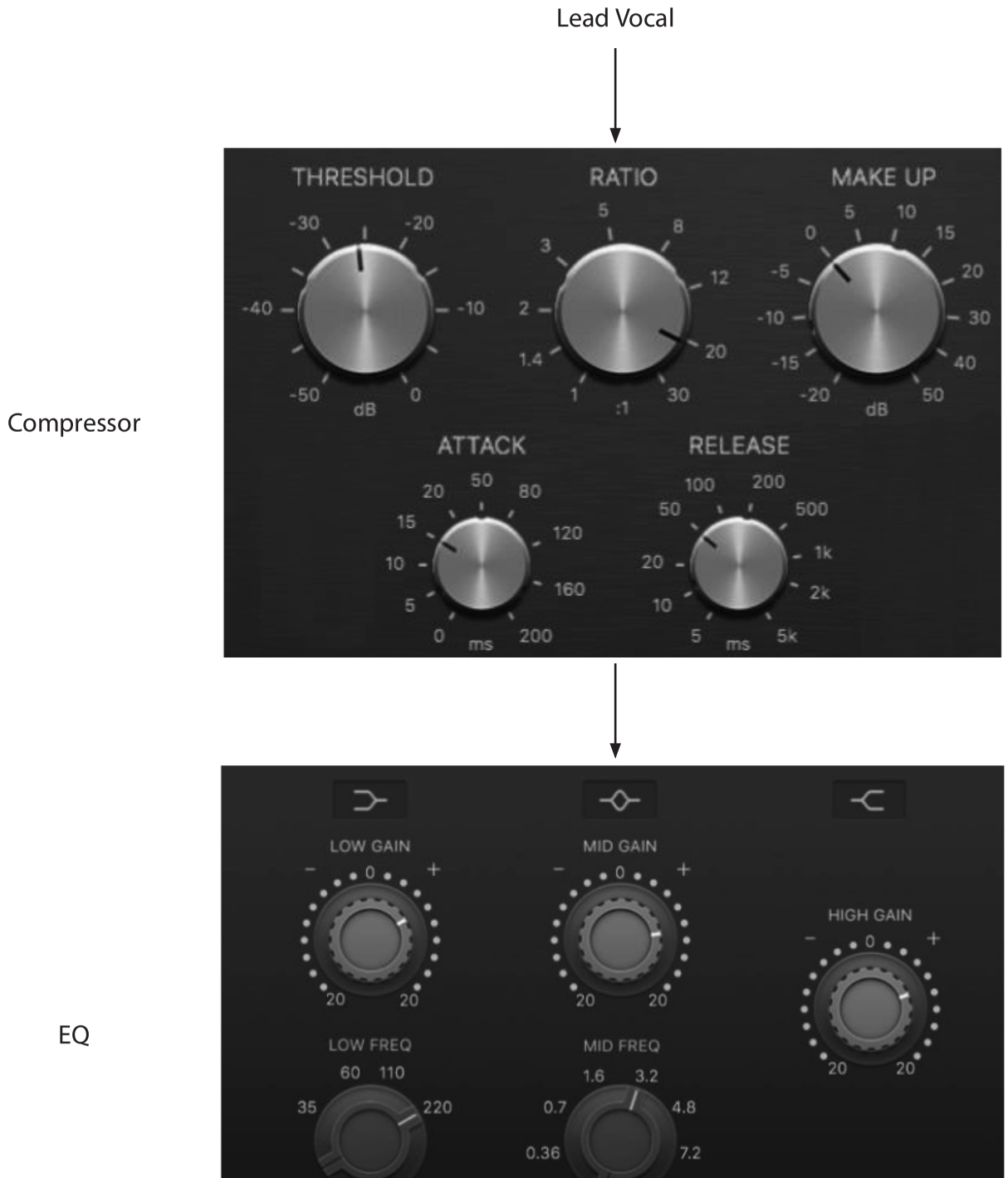
©2023 Pearson Education Ltd.

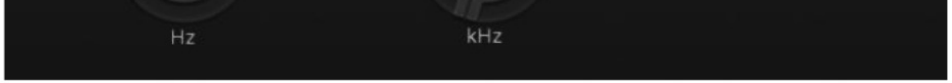
N:1/1/1/1/1/1/1

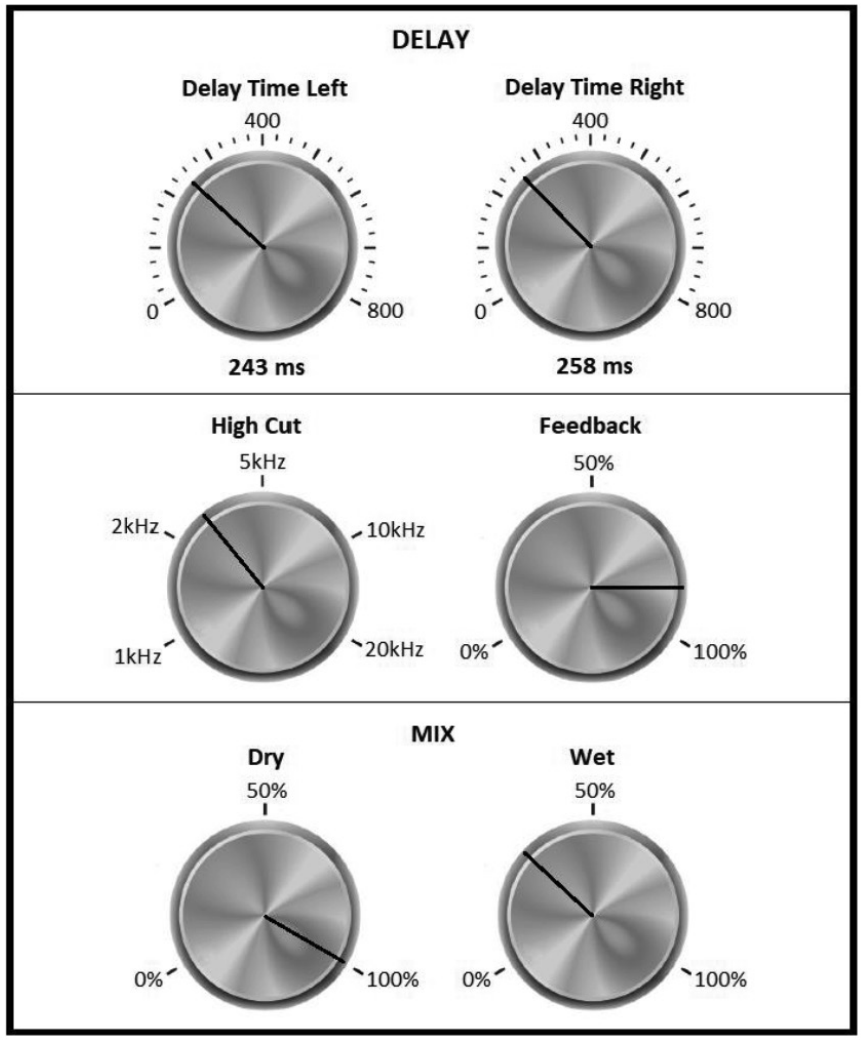
P 7 5 0 6 1 A

Pearson

Figure 1


Lead Vocal
Compressor
THRESHOLD
RATIO
MAKE UP
ATTACK
RELEASE
dB
:1
dB
ms
ms
EQ
LOW GAIN
MID GAIN
HIGH GAIN
LOW FREQ
MID FREQ





Delay

Output

BLANK PAGE